

Notice of Allowability

Application No.

10/564,453

Examiner

John S. Chu

Applicant(s)

MASUDA ET AL.

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 1/24/06.
2. ☒ The allowed claim(s) is/are 1-4.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

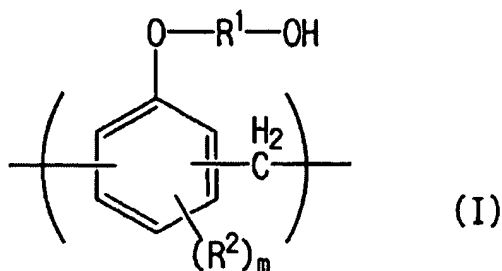
Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

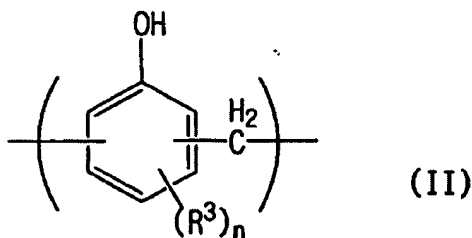
REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance: The claimed invention is drawn to the following:

1. A positive photoresist composition comprising an alkali-soluble novolak resin (A) containing a structural unit (a1) represented by a general formula (I) shown below:



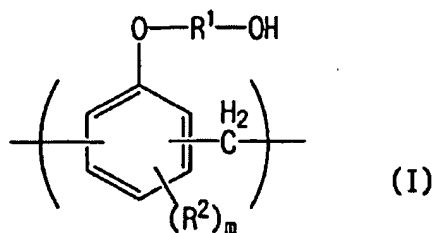
[wherein, R^1 represents an alkylene group of 1 to 5 carbon atoms, R^2 represents a hydrogen atom, a hydroxyl group, or an alkyl group of 1 to 4 carbon atoms, and m represents an integer of 1 to 3], and a structural unit (a2) represented by a general formula (II) shown below:



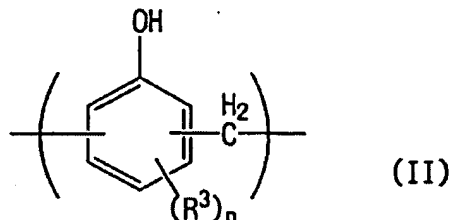
[wherein, R^3 represents a hydrogen atom, a hydroxyl group, or an alkyl group of 1 to 4 carbon atoms, and n represents an integer of 1 to 3], and a photosensitizer (B).

and

2. A positive photoresist composition comprising an alkali-soluble novolak resin (A') containing a structural unit (a1) represented by a general formula (I) shown below:



[wherein, R^1 represents an alkylene group of 1 to 5 carbon atoms, R^2 represents a hydrogen atom, a hydroxyl group, or an alkyl group of 1 to 4 carbon atoms, and m represents an integer of 1 to 3], and a structural unit (a2) represented by a general formula (II) shown below:



[wherein, R^3 represents a hydrogen atom, a hydroxyl group, or an alkyl group of 1 to 4 carbon atoms, and n represents an integer of 1 to 3], wherein a portion of hydrogen atoms of said hydroxyl groups contained within said resin are substituted with 1,2-naphthoquinonediazidesulfonyl groups.

The claimed inventive step is the use of the etherified novolac resin of formula (I) used in a photoresist composition with a photosensitizer.

In the required areas searched none of the references disclose or suggested the particular novolac resin which is etherified with a hydroxyalkyl carbonate compound to give the claimed novolac resin of formula (I) in a composition with a sensitizer. Claim 2 further recites a novolac resin having the hydroxyalkyl etherified novolac resin wherein the hydroxyl groups of the resin have photosensitive quinonediazide groups. None of the prior art references of record

Art Unit: 1752

disclose or render obvious the recited photosensitive novolak resin which is modified with a hydroxyalkyl group as claimed.

Accordingly, claims 1-4 are seen as allowable and passed to issue.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. VARGUI et al (3,860,561) disclose glycidyl etherified novolak resins, while SHERWOOD et al (6,210,855) discloses hydroxyalkylated phenolic resins, but does not disclose the use of them in a positive photoresist composition with a photosensitizer. KAWATA et al disclose photoresist compositions comprising quinonediazide compounds, novolak resins and a hydroxyl compound which is etherified or esterified.

2. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Chu whose telephone number is (571) 272-1329. The examiner can normally be reached on Monday - Friday from 9:30 am to 6:00 pm.

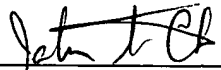
If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Cynthia Kelly, can be reached on (571) 272-1526

The fax phone number for the USPTO is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

Art Unit: 1752

applications is available through Private PMR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John S. Chu
Primary Examiner, Group 1700

J.Chu

June 24, 2006